

U.S. Patent Application Serial No. 10/085,034
Response filed March 14, 2006
Reply to OA dated November 14, 2005

AMENDMENTS TO THE CLAIMS:

Claims 1-18 are pending in this application. Claims 1, 2, 4-11, and 14-17 have been amended.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A wireless LAN system comprising:

a plurality of wireless stations; and

a switching apparatus for switching a frequency channel used between stations for communication~~ed with each other~~,

~~the said~~ switching apparatus having including a means for selecting a frequency channel ~~to be used~~, and a means for sending a switching request packet ~~that identifies for specifying said the~~ selected frequency channel to ~~the said~~ stations upon expiration of a polling period, each of said station[[s]] ~~including~~ having a means for switching a ~~current~~ frequency channel ~~to the frequency from the channel being used to the channel specified identified~~ by the switching request packet received.

Claim 2 (Currently Amended): A wireless LAN system comprising:

a plurality of wireless stations; and

a switching apparatus for switching a frequency channel used between stations for

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communication.

the switching apparatus having a means for selecting a frequency channel, and a means for sending a switching request packet that identifies the selected frequency channel to the stations, each station having a means for switching a frequency channel from the channel being used to the channel identified by the switching request packet. ~~A system as claimed in claim 1;~~

wherein ~~thesaid~~ switching apparatus further comprises a manager for collecting a line status information indicating the varying status of lines between ~~thesaid~~ stations, and a means for judging whether a frequency channel should be switched ~~switching is executed~~ based on ~~thesaid~~ line status information;[[,]] ~~wherein each of said station has further comprises~~ an agent for sending ~~thesaid~~ line status information to ~~thesaid~~ manager in ~~thesaid~~ switching apparatus;[[,]] and ~~wherein said the~~ selecting means in ~~thesaid~~ switching apparatus selects ~~thesaid~~ frequency channel based on a judgment of ~~thesaid~~ judging means.

Claim 3 (Original) A system as claimed in claim 2, wherein said line status information includes information of the total number of packets and the number of error packets.

Claim 4 (Currently Amended): A system as claimed in claim 3, wherein ~~thesaid~~ manager in ~~thesaid~~ switching apparatus communicates with ~~thesaid~~ agent in ~~thesaid~~ station based on Simple Network Management Protocol.

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Claim 5 (Currently Amended): A system as claimed in claim 2[[1]], wherein thesaid selecting means in thesaid switching apparatus selects a frequency channel so that a polarized wave of thesaid frequency channel to be selected does not overlap polarized waves of neighboring frequency channels.

Claim 6 (Currently Amended): A system as claimed in claim 2[[1]], wherein thesaid station further comprises a switching control means for controlling a switching of frequency channels;[[,]] ~~wherein said the~~ switching control means sends a switching confirmation packet to the stations;[[,]] ~~and the switching control means~~ receives a switching confirmation packet from between said stations in each of which the frequency channel is switched that switch frequency channels from the channel being used to the channel identified by the switching request packet in response to thesaid switching request packet sent by thereceived fromsaid switching apparatus;[[,]] ~~wherein when thesaid switching control means does not receive a switching confirmation packet from a station, does not be received from other station, said the~~ switching control means resets the frequency channel to a previous frequency channel that was being used prior to earlier than receiving thesaid switching request packet;[[,]] and ~~wherein said, in order to report a switching result, the~~ switching control means sends a response packet to the switching apparatus indicating of whether said a switching confirmation packet has been received from each station to said switching apparatus as a switching result.

Claim 7 (Currently Amended): A system as claimed in claim 6, wherein when at least one of the switching results received from the stations indicates an unsuccessful frequency channel switch, the said switching control means in the said switching apparatus sends a switching request packet to all of the said stations so that each said station is reset to the previous frequency channel that was being used prior to earlier than receiving a switching request packet, when at least one of said switching results received from said stations is unsuccessful.

Claim 8 (Currently Amended): A system as claimed in claim 2[[1]], wherein the said stations consist of one parent-station and a plurality of child-stations; [[,]] wherein said the agent in each of said the parent-station and each said child-station [[s]] calculates counts a percentage value of the number of success packets in relation to occupied in the total number of packets for each wireless link between the said parent-station and each child-station, and sends a percentage value for each wireless link to the said switching apparatus; [[,]] wherein said the manager in the said switching apparatus receives the said percentage value; [[,]] and wherein said the switching judgment means judges based on the number of wireless links for which the percentage value is smaller than a threshold whether said switching of a frequency channel should be switched is executed, based on the number of the wireless links that have percentage values smaller than a threshold.

Claim 9 (Currently Amended): A system as claimed in claim 8, wherein the said switching judgment means in the said switching apparatus dynamically modifies the said threshold based on the

number of switching times per unit time.

Claim 10 (Currently Amended): A method for a switching apparatus switching frequency channels ~~channel communicated~~ used for communication between stations for a wireless LAN ~~by a switching apparatus~~, ~~the~~said method comprising ~~comprises steps of:~~

- (1) ~~in said the~~ switching apparatus[[,]] selecting a frequency channel to be used;
- (2) ~~in said the~~ switching apparatus[[,]] sending a switching request packet to the stations for specifying said that identifies the selected frequency channel upon expiration of a polling period to said station; and
- (3) ~~in said the~~ station receiving the switching request packet, and switching a current from a frequency channel being used to the frequency channel specified identified by the switching request packet received.

Claim 11 (Currently Amended): A method for a switching apparatus switching frequency channels used for communication between stations for a wireless LAN, the method comprising:

- (1) the switching apparatus selecting a frequency channel to be used;
- (2) the switching apparatus sending a switching request packet that identifies the selected frequency channel to the stations;
- (3) the stations receiving the switching request packet, and switching from a frequency channel being used to the frequency channel identified by the switching request packet; ~~A method~~

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~~as claimed in claim 10, wherein said method further comprises steps of:~~

~~(4) in said the~~ switching apparatus[[,]] collecting a line status information indicating the varying status of lines between thesaid stations, and judging from the line status information whether a frequency channel should be switched ~~switching is executed based on said line status information;~~

~~(5) in said the~~ station[[,]] sending thesaid line status information to thesaid switching apparatus; and,

~~(6) said selecting step in said the~~ switching apparatus in step (1) selecting[[s]] said the frequency channel based on a judgment of thesaid judging step (4).

Claim 12 (Original): A method as claimed in claim 11, wherein said line status information includes information of the total number of packets and the number of error packets.

Claim 13 (Original): A method as claimed in claim 12, wherein said switching apparatus communicates with said station based on Simple Network Management Protocol.

Claim 14 (Currently Amended): A method as claimed in claim 11[[0]], wherein thesaid selecting step (1) in thesaid switching apparatus selects a frequency channel so that a polarized wave of thesaid frequency channel to be selected does not overlap a polarized wave of other neighboring frequency channels.

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Claim 15 (Currently Amended): A method as claimed in claim 11[[0]], wherein thesaid method further comprises, ~~in said station,~~

(7) a switching control step for controlling a switching of frequency channels;[[,]] wherein
~~said switching control step~~the stations sending[[s]] each other a switching confirmation packet;[[,]]
~~the stations receiving and receives~~a switching confirmation packet~~between said~~from stations that
switch for and in each of which the frequency channels from the channel being used to the channel
identified by their switched in response to said switching request packet received from thesaid
switching apparatus;[[,]] wherein when thesaid switching confirmation packet does not be is not
received from other a station, said switching control step resetsresettingthe frequency channel to
a previous frequency channel that was being used prior to~~earlier than~~receiving thesaid switching
request packet;[[,]] and, in order to report a switching result,~~wherein said switching control step~~
~~sends~~sendinga response packet to the switching apparatusindicating of whether thesaid switching
confirmation packet has been received from each station to said switching apparatus as a switching
result.

Claim 16 (Currently Amended): A method as claimed in claim 15, wherein when at least
one of the switching results received from the stations indicates an unsuccessful frequency channel
switch, said the switching control step (7) in said switching apparatussends a switching request
packet to all of thesaid stations so that eachsaid station is reset to the previous frequency channel that
was being used prior to~~earlier than~~receiving thesaid switching request packet again, when at least

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~~one of said switching results received from said stations is unsuccessful.~~

Claim 17 (Currently Amended): A method as claimed in claim 11~~[[0]]~~, wherein ~~said the~~ stations consist of one parent-station and a plurality of child-stations;[[,]] ~~wherein said the~~ parent-station and ~~thesaid~~ child-stations ~~calculate~~~~ount~~ a percentage value per unit time of the number of success packets ~~occupied in in relation to~~ the total number of packets for each wireless link between ~~thesaid~~ parent-station and each ~~said~~ child-station;[[,]] ~~wherein said the~~ line status information sending step (5) sends a percentage value for each wireless link to ~~thesaid~~ switching apparatus;[[,]] ~~wherein said the~~ switching apparatus ~~comprises steps of receiving said~~ ~~receives~~ percentage value;[[,]] and ~~wherein said the~~ switching judgment step judges based on the number of wireless links for which the percentage value is smaller than a threshold whether ~~said switching of a~~ frequency channel should be switched~~is executed, based on the number of the wireless links that said~~ percentage value is smaller than a threshold.

Claim 18 (Original): A method as claimed in claim 17, wherein said switching judgment step in said switching apparatus dynamically modifies said threshold based on the number of switching times per unit time.